

Title (en)
CLUTCH FRICTION PLATE AND CLUTCH DEVICE

Title (de)
KUPPLUNGSREIBSCHEIBE UND KUPPLUNGSVORRICHTUNG

Title (fr)
DISQUE DE FRICTION D'EMBRAYAGE ET DISPOSITIF D'EMBRAYAGE

Publication
EP 3608556 A4 20201209 (EN)

Application
EP 18781416 A 20180307

Priority
• JP 2017074384 A 20170404
• JP 2018008808 W 20180307

Abstract (en)
[origin: EP3608556A1] Provided is a clutch friction plate and a clutch device configured so that stiction torque can be reduced and each of in gear, shift feeling, and neutral find can be smoothly performed. A clutch device (100) includes clutch friction plates (101). In the clutch friction plate (101), multiple small-piece-shaped friction members (103) are radially bonded to surfaces of a core bar (102) formed in a flat-plate annular shape through an oil groove (105). Each friction member (103) includes an outer side (104a) facing an outer edge portion of the core bar (102) and an inner side (104b) facing an inner edge portion of the core bar (102) and extending parallel to the outer side (104a), and is formed in a rectangular shape. The friction members (103) are bonded onto the core bar (102) in such a direction that the outer side (104a) and the inner side (104b) are inclined at an inclination angle (θ) with respect to a perpendicular line (CL) perpendicular to a line (OL) connecting the center (O1) of the core bar (102) as the center of rotation of the clutch friction plate (101) and the center (O2) of the friction member (103).

IPC 8 full level
F16D 13/62 (2006.01); **F16D 13/64** (2006.01)

CPC (source: EP US)
F16D 13/54 (2013.01 - US); **F16D 13/56** (2013.01 - EP); **F16D 13/648** (2013.01 - EP US); **F16D 2300/10** (2013.01 - EP)

Citation (search report)
• [X] EP 2028383 A2 20090225 - AISHIN KAKO KK [JP]
• [X] DE 102014208243 A1 20141106 - SCHAEFFLER TECHNOLOGIES GMBH [DE]
• [X] DE 102014201867 A1 20140828 - MAGNA POWERTRAIN AG & CO KG [AT]
• [X] DE 102016211818 A1 20170105 - DEERE & CO [US]
• [X] DE 102016108703 A1 20161117 - JTEKT CORP [JP]
• [X] WO 2016180540 A1 20161117 - DAIMLER AG [DE]
• [X] DE 102015002310 A1 20160825 - BORGWARNER INC [US]
• [X] DE 102013011677 A1 20150115 - BORGWARNER INC [US]
• [X] US 2006090980 A1 20060504 - KINOSHITA YOSHIO [JP], et al
• See references of WO 2018186099A1

Designated contracting state (EPC)
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